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Adsorption and desorption characteristics of perchlorate in soils. Susarla, S.*(NRC Associate), Wood, G., Wolfe, N.L., McCutcheon, S.C., USEPA, Athens, GA. Perchlorate (ClO4-) is an oxyanion that originates as a contaminant in ground and surface waters from the dissolution of ammonium, potassium, magnesium or sodium salts. Perchlorate is mainly used in solid rocket fuels, explosives, and military batteries. Because of potential harmful effects, perchlorate has recently been added to the EPA's Contaminant Candidate List. The adsorption characteristics of perchlorate in six different sandy soils was examined in the laboratory. The results suggest that perchlorate sorption was dependent on pH, temperature and organic matter of the soils. Strongly effected by pH, the adsorption was maximum around pH 6.5. Organic matter present in the soil was primarily responsible for the sorption of perchlorate. The adsorption data of perchlorate followed a non-linear Freundlich-type isotherm ($S = K C^n$) with $n<1$ and K values between 0.76 and 1.25. Chemisorption is the most probable mechanism for perchlorate adsorption in these soils.